

We claim:

1. A method for forming a liquid coating on a substrate comprising electrostatically spraying drops of the liquid onto a liquid-wetted target region of a conductive transfer surface,
5 wherein the target region has a continuous coating of the liquid before newly-applied drops land, and transferring a portion of the thus-applied liquid from the transfer surface to the substrate to form a wet coating.
2. A method according to claim 1 wherein the transfer surface circulates.
3. A method according to claim 2 wherein the transfer surface comprises a drum.
- 10 4. A method according to claim 3 wherein the drum is grounded.
5. A method according to claim 2 wherein the transfer surface comprises a belt.
6. A method according to claim 1 wherein one or more nip rolls force the substrate against the transfer surface, thereby spreading the applied drops on the transfer surface and decreasing the time required for the drops to coalesce into the coating.
- 15 7. A method according to claim 6 wherein the nip roll causes the coating to have visually improved uniformity.
8. A method according to claim 1 wherein the wet coating is contacted by two or more pick-and-place devices that improve the uniformity of the coating.
- 20 9. A method according to claim 8 wherein at least one of the pick-and-place devices comprises a roll.
10. A method according to claim 9 comprising three or more pick-and-place rolls.
11. A method according to claim 10 wherein three or more of the rolls have different diameters.
12. A method according to claim 11 wherein at least one of the rolls is undriven.
- 25 13. A method according to claim 11 wherein all of the rolls are undriven.

14. A method according to claim 1 wherein the transfer surface comprises a rotating endless belt contacted by two or more pick-and-place devices that improve the uniformity of the coating.

5 15. A method according to claim 1 wherein the substrate comprises an insulative substrate.

16. A method according to claim 15 wherein the substrate is coated without pre-charging the substrate.

10 17. A method according to claim 1 wherein the substrate comprises paper, plastic, rubber, glass, ceramic, metal, biologically derived material, or a combination or composite thereof.

18. A method according to claim 17 wherein the substrate comprises a polyolefin, polyimide or polyester.

19. A method according to claim 1 wherein the wet coating is transferred from the conductive transfer surface to a second transfer surface and thence to the substrate.

15 20. A method according to claim 1 wherein the substrate comprises a porous substrate.

21. A method according to claim 1 wherein the substrate comprises a woven or nonwoven web.

20 22. A method according to claim 1 wherein the substrate is coated without substantial penetration of the coating through the substrate.

23. A method according to claim 1 wherein the substrate comprises an electronic film, component or precursor thereof.

24. A method according to claim 1 wherein the wet coating is dried, cured or otherwise hardened and has a final caliper.

25 25. A method according to claim 1 wherein the drops have an average diameter that is greater than the caliper and the coating is substantially void-free.

26. A method according to claim 1 wherein the caliper is less than about 10 micrometers.

27. A method according to claim 1 wherein the caliper is less than about 1 micrometer.

5 28. A method according to claim 1 wherein the caliper is less than about 0.1 micrometer.

29. A method according to claim 1 wherein the caliper is greater than about 10 micrometers.

10 30. A method according to claim 1 wherein the caliper is greater than about 100 micrometers.

31. A method according to claim 1 wherein the drops are neutralized on the transfer surface before being transferred to the substrate.

15 32. A method according to claim 1 wherein the coating is applied in one or more stripes that wholly or partially overlap, that abut one another, or that are separated by uncoated substrate.